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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,166	11/26/2001	Paul D. Verhagen	ITWO:0021	9356
7590 06/30/2004				
Ralph A. Graham Fletcher, Yoder & Van Someren P.O. Box 692289 Houston, TX 77269-2289			EXAMINER LEUNG, PHILIP H	
			ART UNIT 3742	PAPER NUMBER

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/995,166

Applicant(s)

VERHAGEN, PAUL D.

Examiner

Philip H Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3-22-2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8,22-35 and 43-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8,22-35 and 43-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4-7, 22-25, 27, 28 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (JP 2000-192135) (reference N of the previous Office action), in view of Ulrich et al (US 6, 229,126) (newly cited).

As shown in Figure 1, Watanabe discloses an induction heating system having a power source, a fluid cooling unit, an induction heating device (100C, 101C, 102C), a system controller with an alarm, a flow switch (500) wherein the controller controls operation of the power source and the cooling unit to prevent heat damage to stop power to the induction heating device when the cooling flow through the flow switch is below the set desired flow rate (see the English translation sections [0010] – [0018]). The term “portable” is highly relative as any unit may be considered as “portable”. Therefore, Watanabe discloses the claimed invention except for the explicit showing that the fluid-cooled induction heating device (100C, 101C and 102C) is flexible as now claimed. Ulrich shows that it is well known in the art of induction heating system for hardening of metals, brazing, soldering or curing to use a flexible inductor 103 to heat the object so that one coil could be used to heat different parts of various sizes and shapes (see Figures 1-3 and col. 3, line 4 – col. 4, line 3). It would have been obvious to one of ordinary skill in the art to modify Watanabe to use a flexible inductor for its induction hardening system

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so that the coil can be adapted for objects of different shapes and sizes, in view of the teaching of Ulrich. In regard to claim 8, the use of any well known communication device as an alarm device to notify the user would have been a matter of engineering design variations of alarm lamps or buzzers of Watanabe (see section [0015]).

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (JP 2000-192135), in view of Ulrich et al (US 6, 229,126), as applied to claims 1, 2, 4-7, 22-25, 27, 28 and 43, and further in view of Forster (US 3,873,830) (newly cited).

Watanabe combined with Ulrich discloses the claimed invention except for increasing the cooling fluid flow rate when the cooling fluid flow rate is below a desired cooling fluid flow rate. However, controlling the operation of the cooling unit to increase flow when the flow rate is low would have been obvious to an ordinary artisan in view of Watanabe as it teaches the use of a solenoid valve and a manual bulb to adjust the flow amount of coolant (see section [0009]) in order to maintain the desired coolant flow rate to prevent overheating of the induction coils. Anyway, Forster teaches an induction heating system with an operating condition sensing device to provides an alarm signal and such signal can be used to shut down the welding apparatus or to initiate suitable control measures (see Figures 1 and 2 and col. 6, lines 9-62). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Watanabe to either shut down the complete operation or adjust the operation parameters, such as increase the flow of coolant when the detected cooling flow rate is low, in view of the teaching of Forster, depending on the seriousness of the malfunction situation. For instance, if the low coolant flow was caused by a low water pressure, obviously, the situation could be easily

corrected by increase the flow rate, however, it was caused by ruptured pipes, the whole system would have to be shut down.

4. Claims 8 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (JP 2000-192135), in view of Ulrich et al (US 6, 229,126), as applied to claims 1, 2, 4-7, 22-25, 27, 28 and 43, and further in view of Lerg et al (US 6,288,643) (newly cited).

As set forth above, Watanabe combined with Ulrich discloses the claimed invention except for the exact type of alarms used. Lerg shows there are many types of alarms can be used for the purpose of communicating a sensed condition to people such as a member from the group consisting of a bell, a light, a horn, a phone device, a wireless communication device, etc. (see col. 2, lines 29-37). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Watanabe to use any well known alarms, including a wireless communication system, such as phone or radio for notifying the user over a longer distance, in view of the teaching of Lerg.

5. Claims 29-34 are further rejected under 35 U.S.C. 103(a) as being unpatentable over Jancosek et al (US 4,845,332) (newly cited), in view of Cachat (US 3,705,285) (newly cited) and Watanabe (JP 2000-192135).

Jancosek discloses a portable induction heating system having a power source (221, 222, 223), a portable fluid cooling unit (shown in Figure 4 connected to a cooling cable 71, see col. 7, lines 33-35), an induction heating device (32), a wheeled cart 58 for the power supply and a system controller (Fig. 1A) . It shows that the cooling water is supplied to the heating device

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with a cable 71, that is the cooling fluid unit is not on the carriage. However, Cachat shows that it is well known in the art to carry the cooling on a wheeled carriage (see Figure 4 and col. 8, line 42 – col. 9, line 12). It would have been obvious to modify Jancosek to also carry the fluid cooling unit on the carriage so that the cooling fluid can be supplied to the heating device with better control and ease, in view of Cachat. Jancosek fails to show the use of a flow wherein the controller controls operation of the power source and the cooling unit to prevent heat damage by stopping power to the induction heating device when the cooling flow through the flow switch is below the set desired flow rate (see Figures 1, 1A and 2 and col. 2, line 58 – col. 3, line 42).

Watanabe discloses in Figure 1 an induction heating system having a power source, a fluid cooling unit, an induction heating device (100C, 101C, 102C), a system controller with an alarm, a flow switch (500) wherein the controller controls operation of the power source and the cooling unit to prevent heat damage to stop power to the induction heating device when the cooling flow through the flow switch is below the set desired flow rate (see the English translation sections [0010] – [0018]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jancosek to provide a flow switch to monitor the flow rate of the cooling fluid to maintain sufficient cooling fluid to the induction heating device and to control the power supply to prevent overheating of the heating system, in view of Watanabe.

6. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jancosek et al (US 4,845,332), in view of Cachat (US 3,705,285) and Watanabe (JP 2000-192135). as applied to claims 29-34 above, and further in view of Lerg et al (6,288,643).

As set forth above, Jancosek combined with Cachat and Watanabe discloses the claimed invention except for the exact type of alarms used. Lerg shows there are many types of alarms

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can be used for the purpose of communicating a sensed condition to people such as a member from the group consisting of a bell, a light, a horn, a phone device, a wireless communication device, etc. (see col. 2, lines 29-37). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jancosek combined with Cachat and Watanabe to use any well known alarms, including a wireless communication system, such as phone or radio for notifying the user over a longer distance, in view of the teaching of Lerg.

7. Claims 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (JP 2000-192135), in view of Ogino et al (US 4,456,807) (newly cited).

As shown in Figure 1, Watanabe discloses an induction heating system having a power source, a fluid cooling unit, an induction heating device (100C, 101C, 102C), a system controller with an alarm, a flow switch (500) wherein the controller controls operation of the power source and the cooling unit to prevent heat damage to stop power to the induction heating device when the cooling flow through the flow switch is below the set desired flow rate (see the English translation sections [0010] – [0018]). Therefore, Watanabe discloses the claimed invention except for the use of the alarm to provide an alarm when a signal representative of an improper operating condition in the induction heating power source in addition to a signal representative of the flow rate of the cooling fluid being below the desired flow rate is received. Ogino shows that it is well known in the art of induction heating systems to use alarm systems (36, 37) to notify the user when any of many operating conditions is not proper (39-43) (see Figure 1, col. 4, lines 9-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Watanabe to provide alarm signal when another improper

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operating condition is detected in addition to a signal representative of the flow rate of the cooling fluid being below the desired flow rate is received for better information feedback and a safe operation, in view of the teaching of Ogino. The use of any operation conditions of the induction heating system as a signal representative of the operating condition of the system, such as power current, voltage of the induction heating tank circuit would have been a matter of engineering design variations depending on the exact system arrangement.

8. Claims 44-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (JP 2000-192135), in view of Ogino et al (US 4,456,807) as applied to claims 51-54 above, and further in view of Lerg et al (6,288,643).

As set forth above, Watanabe combined with Ogino discloses the claimed invention except for the exact type of alarms used. Lerg shows there are many types of alarms can be used for the purpose of communicating a sensed condition to people such as a member from the group consisting of a bell, a light, a horn, a phone device, a wireless communication device, etc. (see col. 2, lines 29-37). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Watanabe to use any well known alarms, including a wireless communication system, such as phone or radio for notifying the user over a longer distance, in view of the teaching of Lerg.

9. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (JP 2000-192135), in view of Forster (US 3,873,830).



As shown in Figure 1, Watanabe discloses an induction heating system having a power source, a fluid cooling unit, an induction heating device (100C, 101C, 102C), a system controller, a flow switch (500) wherein the controller controls operation of the power source and the cooling unit to prevent heat damage to stop power to the induction heating device when the cooling flow through the flow switch is below the set desired flow rate (see the English translation sections [0010] – [0018]). The term “portable” is highly relative as any unit may be considered as “portable”. Therefore, Watanabe discloses the claimed invention except for increasing the cooling fluid flow rate when the cooling fluid flow rate is below a desired cooling fluid flow rate. However, controlling the operation of the cooling unit to increase flow when the flow rate is low would have been obvious to an ordinary artisan in view of Watanabe as it teaches the use of a solenoid valve and a manual bulb to adjust the flow amount of coolant (see section [0009]) in order to maintain the desired coolant flow rate to prevent overheating of the induction coils. Anyway, Forster teaches an induction heating system with an operating condition sensing device to provides an alarm signal and such signal can be used to shut down the welding apparatus or to initiate suitable control measures (see Figures 1 and 2 and col. 6, lines 9-62). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Watanabe to either shut down the complete operation or adjust the operation parameters, such as increase the flow of coolant when the detected cooling flow rate is low, in view of the teaching of Forster, depending on the seriousness of the malfunction situation. For instance, if the low coolant flow was caused by a low water pressure, obviously, the situation could be easily corrected by increase the flow rate, however, it was caused by ruptured pipes, the whole system would have to be shut down.

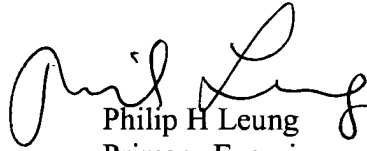
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10. Applicant's arguments with respect to claims 1-8, 22-35 and 43-55 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip H Leung whose telephone number is (703) 308-1710.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (703) 305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Philip H Leung  
Primary Examiner  
Art Unit 3742

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6-27-04